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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,782	12/27/2000	Robert Charles Skerritt	602985.1002	4137
1912	7590	11/04/2003	EXAMINER	
AMSTER, ROTHSTEIN & EBENSTEIN			HAMDAN, WASSEEM H	
90 PARK AVENUE			ART UNIT	
NEW YORK, NY 10016			PAPER NUMBER	

2854  
DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n No.

09/720,782

Applicant(s)

SKERRITT ET AL.

Examiner

Wasseem H Hamdan

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NW

-- Th MAILING DATE f this communication appears on the cov r sheet with th c rrespondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 30 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **Part III - DETAILED ACTION**

#### ***Amendment***

1. This office action is in response to applicant's amendment filed on 10/17/2003.
2. The rejection that stated in the last office action mailed on 04/17/03 (paper No. 17) has been withdrawn, and a new rejection has been set forth as necessitated by the amendment.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 19 and 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrissett (US Patent 5,930,093) in view of Larom et al. (US Patent No. 5,475,557).

Regarding claims 8 and 22, Morrissett discloses a residual current detection device [FIG. 7] for detecting current imbalances [FIG. 7 (45)] between currents flowing to a load in one or more phase lines and from said load in a neutral line, comprising:

a plurality of resistive shunts [FIG. 7 (42)], each connected in series with one of said phase lines [FIG. 7 (left line and 42)] and neutral line [FIG. 7 (right line and 42)]; and

circuitry for detecting an imbalance [FIG. 7 (45 and 46)] between said currents flowing through the resistive shunts [FIG. 7 (42)].

Regarding the newly added limitation "continuously monitoring", even though Morrissett does not explicitly spell out "continuously monitoring", but it is inherently that the sensors [FIG.

7 (46)] are “continuously monitoring” the imbalance current in the system, which it is by definition of the sensor functionality.

Regarding claims 8 and 22, Morrissett discloses the essential elements of the claimed invention except for “continuously monitoring”. Larom et al. discloses “continuously monitoring” [column 1, lines 5-10, 64-66]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett by including “continuously monitoring” as taught by Morrissett, since it would be beneficial for having assurance that the system is operating in a proper and safe manner [Larom: column 1, lines 8-10].

Regarding claim 19, Morrissett discloses the actuator for performing the function of a conventional circuit breaker.[FIG. 1; column 2, lines 40-44].

5. Claims 9-14, 17, 18, 20, 21, 23, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Morrissett (US Patent 5,930,093) in view of Larom et al. (US Patent No. 5,475,557) as applied to claims 8, 19 and 22 above, and further in view of Adame et al. (US Patent 6,058,354).

Regarding claims 9 and 23, Morrissett and Larom et al. together disclose the essential elements of the claimed invention. However, Morrissett does not explicitly disclose a voltage sensor provided for each of the resistive shunts for sensing a voltage developed across the resistive shunt and generating signals indicative of the current flowing through the resistive shunt; and a processor for receiving the signals from the voltage sensors and processing the

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signals to detect the imbalance between the currents flowing through the resistive shunts.

Adame et al. discloses a voltage sensor [FIG. 1 (5)] provided for each of the lines [FIG. 1 ( $v_1$ ,  $v_2$ ,  $v_3$ )] for sensing a voltage and generating signals indicative of the current flowing through the line [FIG. 1 ( $v_1$ ,  $v_2$ ,  $v_3$ ); (5)]; and a processor [FIG. 1 (2)] for receiving the signals from the voltage sensors [FIG. 1 (5)] and processing the signals to detect physical magnitudes of voltage and current input signals to derive various desired parameters and functions from the input signals [FIG. 1; column 2, lines 11-16]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrisett by further including the voltage sensor and the processor as claimed above, the skilled artisan would have been motivated to modify Morrisett as taught by Adame above for the purpose of obtaining the physical magnitudes of voltage and current input signals.

Regarding claim 23, Morrisett discloses the essential elements of the claimed invention except for “continuously monitoring”. Larom et al. discloses “continuously monitoring” [column 1, lines 5-10, 64-66]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrisett by including “continuously monitoring” as taught by Morrisett, since it would be beneficial for having assurance that the system is operating in a proper and safe manner.

Regarding claims 10, 17 and 24, Morrisett and Larom et al. together disclose the essential elements of the claimed invention. However, Morrisett does not explicitly disclose that the voltage sensor comprises an analog-to-digital converter for producing digital signals as

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the signals supplied to the processor. Adame et al. discloses the voltage sensor comprises an analog-to-digital converter for producing digital signals as the signals supplied to the processor [FIG. 1 (3); column 2, lines 64-65]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett by further including an analog-to-digital converter as claimed above, the skilled artisan would have been motivated to modify Morrissett as taught by Adame above for the purpose of converting the signal from analog to digital.

Regarding claim 11, Morrissett and Larom et al. together disclose the essential elements of the claimed invention. However, Morrissett does not explicitly disclose that the analog-to-digital converter is connected to the processor. Adame et al. discloses analog-to-digital converter is connected to the processor [FIG. 1 (3, 2)]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett by further including an analog-to-digital converter is connected to the processor, the skilled artisan would have been motivated to modify Morrissett as taught by Adame above for the purpose of converting the signal from analog to digital.

Regarding claim 12, Morrissett discloses the resistive shunt comprises a composite strip having conductive portions at its ends and a resistive portion in the middle interconnecting the conductive portions [FIG. 7].

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Regarding claims 13 and 27, Morrissett and Larom et al. together disclose the essential elements of the claimed invention. However, Morrissett does not explicitly disclose analog to digital converter for each shunt includes a delta-sigma modulator for producing as the digital signals a high-frequency one-bit digital data stream. Adame et al. discloses analog to digital converter for each shunt includes a delta-sigma modulator [FIG. 2 (11); column 5, lines 1-8]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett as modified by Larom by further including a delta-sigma modulator as taught by Adame so as to produce the digital signals a high-frequency one-bit digital data stream.

Regarding claim 14, Morrissett and Larom together disclose the essential elements of the claimed invention. However, Morrissett does not explicitly disclose decimation filtering for converting the high frequency one-bit digital data stream to a lower frequency multi-bit digital data stream. Adame et al. discloses decimation filtering for converting the high frequency one-bit digital data stream to a lower frequency multi-bit digital data stream [FIG. 2 (12); column 5, lines 1-8]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett as modified by Larom by further including a delta-sigma modulator for producing as the digital signals a high-frequency one-bit digital data stream as claimed above, the skilled artisan would have been motivated to modify Morrissett as taught by Adame above for the purpose of determining the currents.

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Regarding claims 18 and 20, Morrissett and Larom et al. together disclose the essential elements of the claimed invention. However, Morrissett does not explicitly disclose means for measuring power consumption by the load. Adame et al. discloses means for measuring power consumption by the load [FIG. 1; column 1, lines 8-14]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett by further including means for measuring power consumption by the load as claimed above, the skilled artisan would have been motivated to modify Morrissett as taught by Adame above for the purpose of measuring the physical electrical magnitudes.

Regarding claim 21, Morrissett discloses the actuator for performing the function of a conventional circuit breaker [FIG. 1; column 2, lines 40-44].

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Morrissett (US Patent 5,930,093) in view of Larom et al. (US Patent No. 5,475,557) and view of Adame et al. (US Patent 6,058,354) as applied to claims 9-14, 17, 18, 20, 21, 23, 24 and 27 above, and further in view of Cobb, III et al. (US Patent 4,866,559).

Regarding claim 16, Morrissett, Larom et al. and Adame et al. disclose the essential elements of the claimed invention. However, Morrissett, Larom et al. and Adame et al. do not explicitly disclose the conductive portions are comprised of copper and the resistive portion is comprised of manganin. Cobb, III et al. discloses the conductive portions are comprised of copper and the resistive portion is comprised of manganin [column 3, lines 9-26]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to



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modify the teachings of Morrissett and Adame et al. by further including that the conductive portions are comprised of copper and the resistive portion is comprised of manganin, the skilled artisan would have been motivated to modify Morrissett, because the conductive portions are comprised of copper and the resistive portion is comprised of manganin are good conductive material.

7. Claims 15, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Morrissett (US Patent 5,930,093) in view of Larom et al. (US Patent No. 5,475,557) and view of Adame et al. (US Patent 6,058,354) as applied to claims 9-14, 17, 18, 20, 21, 23, 24 and 27, above, and further in view of Granville (US Patent 5,181,026).

Regarding claims 15, 25 and 26, Morrissett, Larom et al. and Adame et al. disclose the essential elements of the claimed invention. However, Morrissett and Adame et al. do not explicitly disclose that the analog-to-digital converter is an integrated circuit. Granville discloses that the analog-to-digital converter is an integrated circuit [column 12, lines 29-30]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Morrissett by further including that the analog-to-digital converter is an integrated circuit, the skilled artisan would have been motivated to modify Morrissett, for the purpose of having smaller size circuitry and more reliable circuitry. Also in this case the A/D converter has to be mounted on the shunt in order to measure the current through the shunt.

***Response to Arguments***

8. Applicant's amendment filed on 09/17/2003 has been fully considered. The Amendment is insufficient to overcome the prior art of record. The examiner withdrew the previous rejection, and a new rejection has been set forth as necessitated by the amendment.

Applicant's arguments on page 9 and 10 that Morrisset "the '093 Patent is directed to a method and apparatus for limiting a fault current in a portable welding gun by providing an auxiliary testing circuit called "safety circuit." (See FIG. 7). The '093 Patent discloses that the resistors in the safety circuit are "sized to limit the fault current to approximately 50 ma," not the full current flowing to a load (i.e., transgun 16) which could reach as high as 575 mA in the "worst case" scenario as shown in FIGS. 3 and 5. (Col. 3, lines 35-36). In other words, the '093 Patent merely teaches supplying a reduced current to an auxiliary safety circuit 38 to test for any current imbalance indicating fault current before supplying full current to the load 16 through isolation contactors 17. During supply of full current to the load, a conventional current imbalance detector 34 is shown to be used to monitor the currents to detect a current imbalance.

The examiner respectfully disagrees, because the applicant's claim is not directed to as how much the current can be reached. Morrissett teaches all the claim limitations, and the structure of the claim reads on the Morrissett reference, wherein a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136

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USPQ 458, 459 (CCPA 1963). In the present case, the claim language of the claims do not result in a structural difference between the claimed invention and the prior art because this language is directed to how the structure was obtained, and not the structure itself.

The Amendment (the newly added limitations) is insufficient to overcome the prior art of record. The newly added “continuously monitoring” limitations in the amended claims (8, 22 and 23) are taught by Larom et al. (US Patent No. 5,475,557) as explained in the office action above. The combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wasseem H Hamdan whose telephone number is (703) 305-3968. The examiner can normally be reached on M-F (first Friday off) 6:30 AM- 4:00 PM.

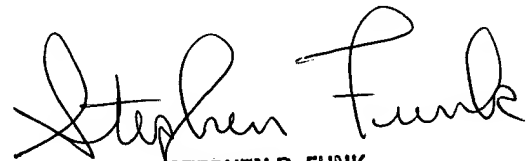
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Andrew H Hirshfeld can be reached on (703) 305-6619. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



Wasseem H. Hamdan

October 31, 2003



STEPHEN R. FUNK  
PRIMARY EXAMINER